

**National Science Foundation
Directorate for Computer and Information Science and Engineering
Advisory Committee**

Minutes for the December 11, 2018, Meeting

**National Science Foundation
2415 Eisenhower Ave.
Alexandria, VA 22314**

Meeting Summary

The fall meeting of the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) Advisory Committee (AC) was held at NSF on Tuesday, December 11, 2018.

Detailed Minutes

Welcome, Introductions, Review of Agenda, and Approval of Minutes

Drs. Margaret Martonosi and Rob Rutenbar, CISE AC co-chairs, opened the meeting at 9 a.m. After introductions of all members in attendance, Drs. Martonosi and Rutenbar reviewed the meeting agenda, and the CISE AC members unanimously approved the minutes from the June 2018 meeting.

NSF and CISE Update

Dr. Jim Kurose, Assistant Director of NSF for CISE, welcomed the AC Members, and provided them with an update on recent CISE and agency-wide activities, including organizational changes, budget processes, and programmatic. Key takeaways from Dr. Kurose's presentation included: CISE activities are aligned with NSF, Administration, and Congressional priorities; CISE investments in fundamental research, research infrastructure, and education, together with partnerships with industry, are producing valuable returns on investment, often over long periods; enrollments and faculty hires are on the rise in the CISE academic community, and NSF is taking steps to respond to these trends; and NSF has announced a new policy on sexual harassment. Dr. Kurose concluded by orienting the AC members toward the remainder of the day's discussions.

Update on NSF's Steps Against Harassment

Jean Feldman, Head of NSF's Policy Office, and Robert (Bob) Cosgrove, the compliance program manager for NSF's Office of Diversity and Inclusion, provided an overview of the new policies on sexual harassment and the U.S. Government's Title IX regulation. Ms. Feldman noted that the new harassment policy was enacted in October 2018 and incorporates community input on a prior draft. A Frequently-Asked Questions (FAQs) document has also been released, and NSF staff have received internal guidance. The key change is that institutions are now required to report violations of Principal Investigators (PIs) and Co-PIs, and this information will be accessible to small subset of NSF staff. Ms. Feldman described the key considerations that went into formulating the policy around this complex issue, including not further harming victims, minimizing unnecessary actions, and dealing with conference settings in which many

cases are reported. Next, Mr. Cosgrove gave an overview on Title IX compliance; Title IX regulates antidiscrimination for educational activities receiving federal assistance. Topics covered in the discussion included selection criteria for Title IX site reviews and coordination efforts between other agencies.

NSF's 10 Big Ideas and Convergence Accelerator (C-Accel)

Overview of NSF's 10 Big Ideas

Dr. Kurose provided the group with an overview of NSF's 10 Big Ideas prior to a presentation on the Convergence Accelerator. The Big Ideas are bold research and process ideas that will drive NSF's long-term investments in research, research infrastructure, and education. These ideas are included as part of the agency's plans for fiscal year (FY) 2019, and they have been well-received by the White House Office of Management and Budget and by Congress. Each Big Idea comprises \$30 million in funds stewarded by individual directorates, but with decision making governed by multi-directorate teams. In addition, the investments span a longer time scale than is typical for interdisciplinary research to enable longer-term funding commitments. CISE co-leads the Harnessing the Data Revolution, Future of Work at the Human-Technology Frontier, and Quantum Leap Big Ideas, and actively participates in the Navigating the New Arctic and Understanding the Rules of Life (URoL) Big Ideas. Dr. Kurose then highlighted several new solicitations pursuant to the Big Ideas.

Convergence Accelerator

Following the Big Ideas overview, Dr. Suzi Iacono, Office Head for the Office of Integrative Activities (OIA), Dr. Dawn Tilbury, AD of NSF for Engineering (ENG), Mr. Jeremy Epstein, Deputy Division Director for the CISE Division of Computer and Network Systems (CNS) and Co-Chair of the NSF-wide C-Accel Working Group, delivered a presentation on the C-Accel. Drs. Iacono and Tilbury explained the structure, process, and overall concepts behind the C-Accel and its NSF management team. The concept of a C-Accel is similar to that of a business accelerator, but with a focus on convergence research. Key features of the C-Accel may eventually include diverse teams, partnerships, co-opetition, tracks and cohorts, milestones and deliverables, intentional management, intensive mentorship, seed investments, multiple stages, competition pitches, and down-selection. An initial pilot will consist of a few pre-defined "tracks," with longer-term directions to be set with community input.

Working Lunch Discussion

During lunch, the AC discussed the possibility of forming subcommittees like the existing AC Subcommittee on Education. A positively-received proposal called for a joint subcommittee with the AC for the SBE directorate, which has a relatively new AD; this proposed joint CISE-SBE AC Subcommittee would identify potential challenges and opportunities at the intersection of the CISE and SBE communities, with a particular focus on the human-technology frontier. AC members suggested a joint CISE-SBE AC meeting in approximately one year could serve as a deadline for this subcommittee. The CISE AC also discussed forming a committee focused on a broad assessment of CISE research opportunities over the next 5-10 years. This activity could result in a document to support the CISE AD transition later this fall, similar to the *Computing Visions 2025* document produced four years ago. Finally, it was noted that the Subcommittee on Education is seeking additional members.

NSF, CISE, and Administration Activities in Artificial Intelligence (AI)

Overview of Administration Activities in AI

Dr. Kurose provided an overview of AI-related activities at NSF and across the federal government. He noted that funding AI research and education and removing barriers to innovation in this area is an Administration priority, and that NSF and CISE are natural leaders in this space. Dr. Kurose noted a [2018 White House Summit on AI for American Industry](#), as well as the formulation of new committees to work across the government on these issues, including a Select Committee on AI co-chaired by the NSF Director; a Machine Learning and AI Subcommittee of the National Science and Technology Council co-chaired by the CISE AD; and an [AI Research and Development \(R&D\) Interagency Working Group \(IWG\)](#) within the federal [Networking and Information Technology Research and Development \(NITRD\) program](#) co-chaired by the Division Director for the NSF/CISE Division of Information and Intelligent Systems (IIS).

NITRD AI R&D IWG Activities, including an Update to the 2016 National AI R&D Strategic Plan

Dr. Henry Kautz, Division Director for CISE/IIS, provided an update on the activities of the NITRD AI R&D IWG activities, followed by a discussion with the AC. This IWG—co-chaired by Drs. Kautz and Jeff Alstott, from IARPA, and Dr. Henry Kautz, from NSF, with participation from NIST, NSA, DARPA, U.S. Department of Justice, Food and Drug Administration, National Institutes of Health, National Institute of Standards and Technology, National Security Agency, and U.S. Patent and Trademark Office—is charged with updating the 2016 [National AI Research and Development Strategic Plan](#). The group is also developing the first National AI R&D Implementation Report, which will incorporate input from a broad base of stakeholders. Dr. Kautz described the planned timeline and highlighted key focus areas, such as long-term investments in AI, human-AI collaboration, ethical and societal implications of AI, and safety and security of AI systems. Key takeaways from the discussion that followed included suggestions that: reports reflect diverse stakeholder inputs; expectations about the promise of AI must be tempered with realities; education and workforce are critical; and investments in foundational and related topics remain important.

Meeting with NSF Director and Chief Operating Officer (COO)

The AC members met with NSF Director Dr. France Córdova and COO Fleming Crim. Drs. Martonosi and Rutenbar welcomed the Director and COO and introduced each AC member. Dr. Córdova then gave introductory remarks about the enthusiasm for CISE topics in the Administration and more broadly, and highlighted the growth of the CISE community in recent years. Key topics discussed included federal funding levels and proposal pressure metrics; the need to help industry grasp and advocate for the importance of investments of fundamental research; the value of building partnerships at scale; the C-Accel; the potential joint CISE-SBE AC Subcommittee; and the expanding role of CISE in transforming science and engineering. The group also discussed the new NSF policy on sexual harassment; the AC thanked the director for her leadership on this issue.

Looking Forward, Closing Remarks, and Wrap-up

To conclude, the AC and Dr. Kurose revisited some of the key topics that arose throughout the day, such as the creation of a visioning document for the incoming CISE AD; ongoing workforce and education efforts; retaining talent in academia; recent work to create partnerships at scale and to move research concepts to market faster; and the importance of engaging and creating advocates for fundamental research within industry—perhaps through an Industry AC.

Drs. Martonosi and Rutenbar thanked Dr. Kurose, CISE staff, and the AC members for a successful meeting.

The meeting adjourned at 4:45 p.m.